

IN THE CLAIMS

Claims 1-19 (Canceled).

Claim 20 (Currently Amended): An in-situ method of determining an etch property for etching a layer on a substrate in a plasma processing system comprising:

providing a thickness of said layer, wherein said thickness comprises at least one of a minimum thickness, a maximum thickness, a mean thickness, and a thickness range;

etching said layer on said substrate;

measuring at least one a first endpoint signal corresponding to emission from a chemical constituent whose concentration decays during endpoint and a second endpoint signal corresponding to emission from a chemical constituent whose concentration rises during endpoint using a diagnostic system coupled to said plasma processing system, wherein said at least one endpoint signal comprises an endpoint transition; and

determining said etch rate from a ratio of said thickness to a difference between a time during said endpoint transition and a starting time of said etching.

Claim 21 (Original): The method as recited in claim 20, wherein said diagnostic system comprises at least one of an optical diagnostic subsystem and an electrical diagnostic subsystem.

Claim 22 (Original): The method as recited in claim 21, wherein said optical diagnostic subsystem comprises at least one of a detector, an optical filter, a grating, and a prism.

Claim 23 (Original): The method as recited in claim 21, wherein said optical diagnostic subsystem comprises at least one of a spectrometer and a monochromator.

Claim 24 (Currently Amended): The method as recited in claim 21, wherein said electrical diagnostic subsystem comprises at least one of ~~a voltage probe, a current probe,~~ an external RF antenna measuring a radiated RF field external to the plasma processing system, ~~a power meter, a spectrum analyzer,~~ and a capacitor setting monitor monitoring capacitor settings in an impedance match network.

Claim 25 (Original): The method as recited in claim 20, wherein said endpoint transition comprises a starting time, an end time, and an inflection time.

Claim 26 (Original): The method as recited in claim 25, wherein said thickness is said minimum thickness of said layer and said time is said starting time of said endpoint transition.

Claim 27 (Currently Amended): The method as recited in claim 25, wherein said etch rate is determined from a ratio of said maximum thickness of said layer to said end time of said endpoint transition in one of said ~~at least one~~ endpoint signals.

Claim 28 (Currently Amended): The method as recited in claim 25, wherein said etch rate is determined from a ratio of said mean thickness of said layer to said inflection time of said endpoint transition in one of said ~~at least one~~ endpoint signals.

Claim 29 (Canceled).

Claim 30 (Currently Amended): The method as recited in claim ~~[[29]]~~20, wherein a ratio signal is determined from a ratio of ~~[[a]]~~the first endpoint signal ~~of said two endpoint signals~~ to ~~[[a]]~~the second endpoint signal ~~of said two endpoint signals~~.

Claim 31 (Original): The method as recited in claim 30, wherein said ratio signal comprises an endpoint transition.

Claim 32 (Original): The method as recited in claim 31, wherein said endpoint transition comprises a starting time, an end time, and an inflection time.

Claim 33 (Original): The method as recited in claim 32, wherein said etch rate is determined from a ratio of said minimum thickness of said layer to said starting time of said endpoint transition in said ratio signal.

Claim 34 (Original): The method as recited in claim 32, wherein said etch rate is determined from a ratio of said maximum thickness of said layer to said end time of said endpoint transition in said ratio signal.

Claim 35 (Original): The method as recited in claim 32, wherein said etch rate is determined from a ratio of said mean thickness of said layer to said inflection time of said endpoint transition in said ratio signal.

Claim 36 (Currently Amended): The method as recited in claim 20, wherein ~~[[said]]~~ at least one endpoint signal is related to a spectral irradiance of emitted light from said plasma processing system.

Claim 37 (Currently Amended): The method as recited in claim 20, wherein [[said]] at least one endpoint signal is filtered.

Claim 38 (Currently Amended): The method as recited in claim 20, wherein said method further comprises determining a time duration for said endpoint transition of [[said]] at least one endpoint signal.

Claim 39 (Original): The method as recited in claim 38, wherein said method further comprises determining an etch rate uniformity from said etch rate, said time duration of said endpoint transition, and said thickness range of said layer.

Claim 40 (Original): The method as recited in claim 31, wherein said method further comprises determining a time duration for said endpoint transition of said ratio signal.

Claim 41 (Original): The method as recited in claim 40, wherein said method further comprises determining an etch rate uniformity from said etch rate, said time duration of said endpoint transition, and said thickness range of said layer.

Claims 42-43 (Canceled).